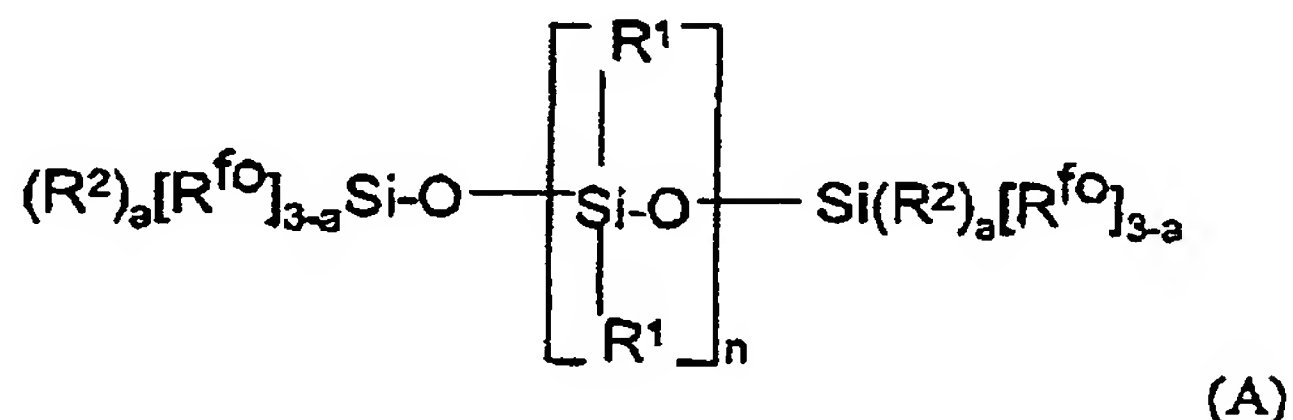


WHAT IS CLAIMED IS:

1. A single-component polyorganosiloxane (POS) composition which is stable on storage in the absence of moisture and which crosslinks in the presence of water to give an elastomer, which composition comprises at least one crosslinkable linear polyorganopolysiloxane POS, an inorganic filler and a crosslinking catalyst, characterized in that the POS exhibits nonhydroxylated functionalized ends, in particular ends of alkoxy, oxime, acyl and/or enoxy type, preferably alkoxy type, in that the composition is essentially devoid of hydroxylated POSs and in that the catalyst is a vanadium compound.

2. The composition as claimed in claim 1, characterized in that it comprises:

-A- at least one crosslinkable linear polyorganopolysiloxane **A** of formula:



in which:

- the substituents  $R^1$ , which are identical or different, each represent a saturated or unsaturated, substituted or unsubstituted, aliphatic, cyclanic or aromatic,  $C_1$  to  $C_{13}$  monovalent hydrocarbon radical;
- the substituents  $R^2$ , which are identical or different, each represent a saturated or unsaturated, substituted or unsubstituted, aliphatic, cyclanic or aromatic,  $C_1$  to  $C_{13}$

monovalent hydrocarbon radical;

- the functionalization substituents  $R^{fo}$ , which are identical or different, each represent:

5

- an oxime residue of formula:

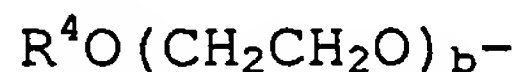


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with  $R^3$  independently representing a linear or branched  $C_1$  to  $C_8$  alkyl, a  $C_3$  to  $C_8$  cycloalkyl or a  $C_2$ - $C_8$  alkenyl,

- an alkoxy residue of formula:

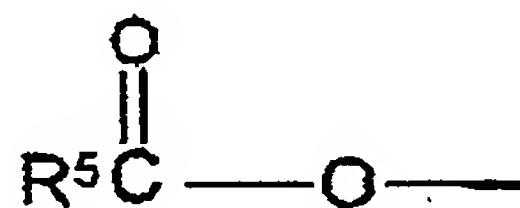
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with  $R^4$  independently representing a linear or branched  $C_1$  to  $C_8$  alkyl or a  $C_3$  to  $C_8$  cycloalkyl and  $b = 0$  or  $1$ ;

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- an acyl residue of formula:

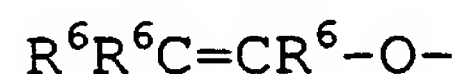


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with  $R^5$  representing a saturated or unsaturated, branched or unbranched, substituted or unsubstituted, aliphatic, cyclanic or aromatic,  $C_1$  to  $C_{13}$  monovalent hydrocarbon radical,

30

- an enoxy residue of formula:



with the  $R^6$  groups, which are identical or different, representing hydrogen or a saturated or unsaturated, branched or unbranched, substituted or unsubstituted, aliphatic, cyclanic or aromatic,  $C_1$  to  $C_{13}$  monovalent hydrocarbon radical,

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- n has a value sufficient to confer, on the POS **A**, a dynamic viscosity at 25°C ranging from 1000 to 1000000 mPa.s;

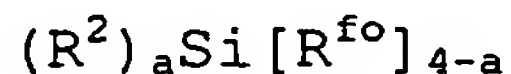
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- a is zero or 1;

-B- optionally at least one polyorganosiloxane resin **B** functionalized by at least one radical  $R^{fo}$  corresponding to the definition given above and exhibiting, in its structure, at least two different siloxyl units chosen from those of formulae  $(R^1)_3SiO_{1/2}$  (M unit),  $(R^1)_2SiO_{2/2}$  (D unit),  $R^1SiO_{3/2}$  (T unit) and  $SiO_2$  (Q unit), at least one of these units being a T or Q unit, the radicals  $R^1$ , which are identical or different, having the meanings given above with respect to the formula (**A**) and said resin having a content by weight of functional radicals  $R^{fo}$  ranging from 0.1 to 10%, it being understood that a portion of the radicals  $R^1$  are radicals  $R^{fo}$ ;

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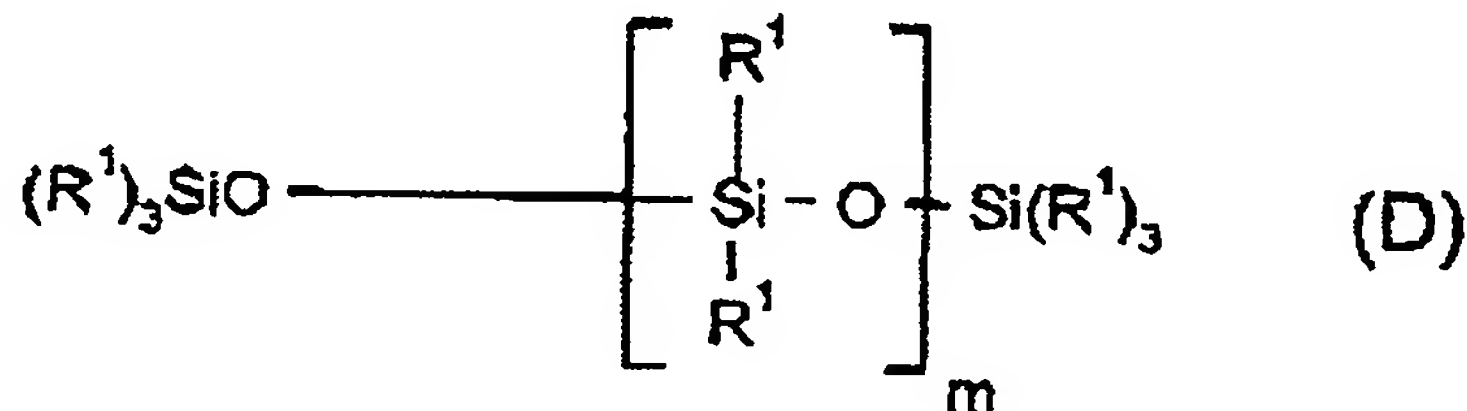
-C- optionally at least one crosslinking agent **C** of formula:



with  $R^2$ ,  $R^{fo}$  and a being as defined above,

25

-D- optionally at least one linear polydiorganosiloxane **D** which is unreactive and which is not functionalized with  $R^{fo}$ , of formula:



30

in which:

- the substituents  $R^1$ , which are identical or different, have the same meanings as those given above for the polyorganosiloxane **A** of formula (A);
- 5 - m has a value sufficient to confer, on the polymer of formula (D), a dynamic viscosity at 25°C ranging from 10 to 200000 mPa.s;
- E- an effective amount of a vanadium compound **E** as  
10 crosslinking catalyst or accelerator;
- F- an inorganic filler **F**, in particular a reinforcing and/or bulking filler, preferably based on silica;
- 15 -H- optionally at least one auxiliary agent **H**.

3. The composition as claimed in claim 1 or 2, characterized in that the compound **E** is a compound of vanadium in the 5 oxidation state and in particular a  
20 compound of formula (E<sub>1</sub>):  $X_3VO$ , in which the radicals X, which are identical or different, are chosen from: 1-electron radical ligands X, in particular alkoxy or halogen atom, e.g. Cl, Br and F, and 3-electron radical ligands LX, in particular a ligand derived from  
25 acetylacetone, from a  $\beta$ -keto ester, from a malonic ester, from an allyl compound, from a carbamate, from a dithiocarbamate or from a carboxylic acid.

4. The composition as claimed in claim 3,  
30 characterized in that the vanadium compound is a trialkoxy vanadate, preferably chosen from:  
 $[(CH_3)_2CHO]_3VO$ ,  $(CH_3CH_2O)_3VO$ ,  $[(CH_3)_3CO]_3VO$ ,  
 $[(CH_3CH_2)(CH_3)CHO]_3VO$  or  $[(CH_3)_2(CH_2)CHO]_3VO$ .

35 5. The composition as claimed in claim 1 or 2, characterized in that the compound **E** is a compound of vanadium in the 4 oxidation state and in particular a compound of formula (E<sub>2</sub>):  $X_2VO$ , in which the radicals X, which are identical or different, are chosen from:

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electron radical ligands X, in particular alkoxy or halogen atom, e.g. Br, F or Cl, and 3-electron radical ligands LX, in particular a ligand derived from acetylacetone, from a  $\beta$ -keto ester, from a malonic ester, from an allyl compound, from a carbamate, from a dithiocarbamate or from a carboxylic acid.

6. The composition as claimed in claim 5, characterized in that the vanadium compound is chosen from:  $\text{VOCl}_2$ ,  $[(\text{CH}_3)_2\text{CHO}]_2\text{VO}$ ,  $(\text{CH}_3\text{CH}_2\text{O})_2\text{VO}$ ,  $[(\text{CH}_3)_3\text{CO}]_2\text{VO}$ ,  $[(\text{CH}_3\text{CH}_2)(\text{CH}_3)\text{CHO}]_2\text{VO}$  or  $[(\text{CH}_3)_2(\text{CH}_2)\text{CHO}]_2\text{VO}$ .

7. The composition as claimed in claim 3 or 5, characterized in that, in the formula (E<sub>1</sub>) or (E<sub>2</sub>), the term "alkoxy group" is understood to mean an OR group in which R is a linear or branched C<sub>1</sub>-C<sub>13</sub>, in particular C<sub>1</sub>-C<sub>8</sub>, preferably C<sub>1</sub>-C<sub>4</sub>, alkyl or a C<sub>3</sub>-C<sub>8</sub> cycloalkyl.

8. The composition as claimed in claim 1 or 2, characterized in that the compound **E** is a compound of vanadium in the 4 oxidation state of formula (E<sub>3</sub>): **VX<sub>4</sub>**, in which the X groups, which are identical or different, are chosen from halogens, in particular Br, F or Cl, and alkoxy groups OR with R representing in particular a linear or branched C<sub>1</sub>-C<sub>13</sub>, in particular C<sub>1</sub>-C<sub>8</sub>, preferably C<sub>1</sub>-C<sub>4</sub>, alkyl or a C<sub>3</sub>-C<sub>8</sub> cycloalkyl.

9. The composition as claimed in claim 8, characterized in that the vanadium compound is chosen from:  $[(\text{CH}_3)_2\text{CHO}]_4\text{V}$ ,  $(\text{CH}_3\text{O})_4\text{V}$ ,  $(\text{CH}_3\text{CH}_2\text{O})_4\text{V}$ ,  $[(\text{CH}_3)_3\text{CO}]_4\text{V}$ ,  $[(\text{CH}_3\text{CH}_2)(\text{CH}_3)\text{CHO}]_4\text{V}$  or  $[(\text{CH}_3)_2(\text{CH}_2)\text{CHO}]_4\text{V}$ .

10. The composition as claimed in claim 1 or 2, characterized in that the compound **E** is a compound of vanadium in the 3 oxidation state of formula (E<sub>4</sub>): **XVO**, in which the radical X is a 3-electron radical ligand LX, in particular a ligand derived from acetylacetone, from a  $\beta$ -keto ester, from a malonic ester, from an

allyl compound, from a carbamate, from a dithiocarbamate or from a carboxylic acid.

11. The composition as claimed in claim 3, 5, 8 or 10, characterized in that, in the formula (E<sub>1</sub>), the 3-electron radical ligands LX are chosen from the acetylacetonato (CH<sub>3</sub>COCHCOCH<sub>3</sub>) and allyl (CH<sub>2</sub>=CH-CH<sub>2</sub>) radicals.

12. The composition as claimed in claim 1 or 2, characterized in that the compound **E** is a compound of vanadium in the 5 oxidation state comprising 5-electron radical ligands L<sub>2</sub>X, in particular dienyl ligands, especially cyclopentadienyl ligands.

13. The composition as claimed in any one of the preceding claims, characterized in that it comprises from 0.1 to 10, preferably 0.5 to 6, parts by weight of crosslinking/curing catalyst **E**.

14. The composition as claimed in any one of the preceding claims, characterized in that the functionalization substituents R<sup>fo</sup> are of alkoxy type and correspond to the formula R<sup>4</sup>O(CH<sub>2</sub>CH<sub>2</sub>O)<sub>b</sub>-, with R<sup>4</sup> independently representing a linear or branched C<sub>1</sub> to C<sub>8</sub> alkyl or a C<sub>3</sub> to C<sub>8</sub> cycloalkyl and b = 0 or 1.

15. The composition as claimed in any one of the preceding claims, characterized in that the substituents R<sup>1</sup> of the polymers POS **A** functionalized by R<sup>fo</sup>, of the resins **B** functionalized by R<sup>fo</sup> and of the optional nonfunctionalized and unreactive polymers **D** are selected from the group formed by:

- alkyl and haloalkyl radicals having from 1 to 13 carbon atoms,
- cycloalkyl and halocycloalkyl radicals having from 5 to 13 carbon atoms,

- alkenyl radicals having from 2 to 8 carbon atoms,
  - mononuclear aryl and haloaryl radicals having from  
5 6 to 13 carbon atoms,
  - cyanoalkyl radicals, the alkyl members of which  
have from 2 to 3 carbon atoms,
- 10 the methyl, ethyl, propyl, isopropyl, n-hexyl, phenyl,  
vinyl and 3,3,3-trifluoropropyl radicals being  
particularly preferred.
- 15 16. An elastomer capable of adhering to various  
substrates and obtained by crosslinking and curing the  
composition as claimed in any one of the preceding  
claims.
- 20 17. The use of a vanadium compound as defined in any  
one of claims 1 to 13 as catalyst for a single-  
component polyorganosiloxane (POS) composition which is  
stable on storage in the absence of moisture and which  
crosslinks in the presence of water to give an  
elastomer, which composition comprises at least one  
25 crosslinkable linear polyorganopolysiloxane POS and an  
inorganic filler, the POS exhibiting nonhydroxylated  
functionalized ends, in particular ends of alkoxy,  
oxime, acyl and/or enoxy type, preferably alkoxy type,  
the composition being essentially, preferably  
30 completely, devoid of hydroxylated POSs.
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